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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/531,134

**Applicant(s)**

AL-ADNANI, ADNAN

**Examiner**

JOSHUA SMITH

**Art Unit**

2619

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The amendment filed 03/20/2008 has been entered.

- **Claims 1 and 3-11 are pending.**
- **Claim 2 is canceled.**
- **Claims 1 and 3-11 stand rejected.**

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over Berenbaum et al. (Patent No.: US 6,272,144 B1) in view of Griffin et al. (Patent Number: 5,406,403) and Markwalter et al. (Patent No.: US 6,577,630 B1), hereafter referred to as Berenbaum, Griffin, and Markwalter, respectively.

**In regards to Claim 1**, Berenbaum teaches in column 3, lines 8-12, and in column 4, lines 6-12, and in FIG. 3, Sheet 1 of 3, a line card (item 50, FIG. 3) includes a transmission convergence (TC) device (item 543, FIG. 3) with an in-band control configuration (Reconfigurable signal processing architecture comprising a reconfigurable data processing module).

Berenbaum also teaches in column 4, lines 12-16, and in column 5, lines 23-27 and 37-44, and in FIG. 4, Sheet 2 of 3, a transmission convergence device interfaces with a Utopia port, which is part of an ATM cell-based switch fabric interconnect with a SONET port, and a message format of a single 53-byte ATM cell (item 70, FIG. 4) for use in transferring control information between a control processor and a transmission convergence device, and a given ATM cell received in a transmission convergence device from a control processor is identified as a control message by the presence of a specific virtual path indicator (VPI)/virtual channel indicator (VCI) address in the ATM header (item 72, FIG. 4) (data is input to a module in a packet frame structure including configuration frames and processing frames, each frame including a header section, a header section having a mode selection bit indicating whether the frame contains reconfiguration data or processing data, and a module is operable in a reconfiguration mode or a processing mode responsive to a frame header and a mode selection signal).

Berenbaum fails to explicitly teach a module is operable in a reconfiguration mode or a processing mode responsive to a mode selection signal, a header section and a data section, a plurality of reconfigurable data processing modules, a single decoder serving a plurality of modules, a single decoder decoding bits of packets and

providing signals to a plurality of modules, in which a portion of a packet is used to change data processing performed by a module, data portion of a packet is processed by a data processing module responsive to a respective selection signal. Griffin teaches a module is operable in a reconfiguration mode or a processing mode responsive to a mode selection signal, and Markwalter teaches a header section and a data section, a plurality of reconfigurable data processing modules, a single decoder serving a plurality of modules, a single decoder decoding bits of packets and providing signals to a plurality of modules, in which a portion of a packet is used to change data processing performed by a module, data portion of a packet is processed by a data processing module responsive to a respective selection signal.

In the same field of endeavor, Griffin teaches in column 3, lines 30-43, and in FIG. 3, a DATA I.D. BIT (FIG. 3) in front of and separated from DATA BITS (FIG. 3), and where a value of 1 for the data identification bit may be preselected to indicate a packet contains configuration information, and, is a valid configuration is determined to exist, the transmitter shifts into normal transmit mode (a module is operable in a reconfiguration mode or a processing mode responsive to a mode selection signal). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Griffin with the invention of Berenbaum since Griffin explicitly teaches a transmitter module shifting from a configuration mode to a normal transmit mode, and can be implemented in the apparatus of Berenbaum since it ensures a convergence device of Berenbaum is configured properly prior to further data

processing, ensuring that subsequent data is not processed with an incorrect, obsolete, or expired configuration that may result in lost, misused, or misdirected data.

In the same field of endeavor, Markwalter teaches in column 8, line 65 to column 9, line 12, and in FIG. 2 and FIG. 3, a frame control FEC decoder 64 (FIG. 2) receives coded frame control information (item 98, FIG. 3) from an FFT 58 (FIG. 2), and the frame control FEC decoder 65 (FIG. 2) uses these inputs to decode and demodulate the frame control information in a frame delimiter (item 92, FIG. 3), and once decoded and demodulated, the frame control information (item 98, FIG. 3) is passed to a MAC interface unit 74 (FIG. 2) for transfer to a MAC unit, and the MAC unit determines from the information if the delimiter (item 92, FIG. 3) indicates a start-of-frame, and if a start-of-frame is indicated, a RX configuration unit (item 72, FIG. 2) receives from the MAC unit frame control information to indicate that further decoding is necessary and the RX configuration unit uses the frame control information to direct the controller to configure the receiver units (items 66, 68, and 70, FIG. 2) for further decoding of the remainder of the frame, such as a payload (item 82, FIG. 3) (a header section and a data section, a plurality of reconfigurable data processing modules, a single decoder serving a plurality of modules, a single decoder decoding bits of packets and providing signals to a plurality of modules, in which a portion of a packet is used to change data processing performed by a module, data portion of a packet is processed by a data processing module responsive to a respective selection signal). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Markwalter with the invention of Berenbaum since Markwalter provides a routing system

in which configuration methods can operate in a device implementing a MAC protocol and communicating through noisy media, whether wireless or wired media, and implementing OFDM, which can be incorporated into the system of Berenbaum to allow the ATM communication switches to operate in an OFDM based wireless ATM system.

**Claims 3-7 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Berenbaum in view of Griffin, Markwalter, and further in view of Laufer et al. ("PCI-PipeRench and the SwordAPI: A System for Stream-based Reconfigurable Computing", 1999, IEEE Comput. Soc., US, p. 303), hereafter referred to as Laufer.

**In regards to Claim 3**, as discussed in the rejection of Claim 1, Berenbaum teaches a frame header, a mode selection bit, and a module. Beberbaum fails to teach a bit for each module. Laufer teaches these limitations.

In the same field of endeavor, Laufer teaches in page 203, lower half of first column, a Chip ID tells each chip whether to keep a header or pass it along. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Laufer with the invention of Berenbaum since Laufer provides a technique where a component can determine if it is required to process a packet or pass it to another component, allowing a control processor in the apparatus of Berenbaum to address directly to a component within the apparatus so that components are not required to determine where to forward data within the apparatus through indirect means, such as processing network addresses.

**In regards to Claim 4**, as discussed in the rejection of Claim 1, Berenbaum teaches mode selection bit of a frame header. Berenbaum fails to teach a single decoder decodes a frame header to provide signals to a plurality of modules. Markwalter teaches these limitations.

Markwalter teaches in column 8, line 65 to column 9, line 12, and in FIG. 2 and FIG. 3, a frame control FEC decoder 64 (FIG. 2) receives coded frame control information (item 98, FIG. 3) from an FFT 58 (FIG. 2), and the frame control FEC decoder 65 (FIG. 2) uses these inputs to decode and demodulate the frame control information in a frame delimiter (item 92, FIG. 3), and once decoded and demodulated, the frame control information (item 98, FIG. 3) is passed to a MAC interface unit 74 (FIG. 2) for transfer to a MAC unit, and the MAC unit determines from the information if the delimiter (item 92, FIG. 3) indicates a start-of-frame, and if a start-of-frame is indicated, a RX configuration unit (item 72, FIG. 2) receives from the MAC unit frame control information to indicate that further decoding is necessary and the RX configuration unit uses the frame control information to direct the controller to configure the receiver units (items 66, 68, and 70, FIG. 2) for further decoding of the remainder of the frame, such as a payload (item 82, FIG. 3) (a single decoder decodes a frame header to provide signals to a plurality of modules). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Markwalter with the invention of Berenbaum since Markwalter provides a routing system in which configuration methods can operate in a device implementing a MAC protocol and communicating through noisy media, whether wireless or wired media, and

implementing OFDM, which can be incorporated into the system of Berenbaum to allow the ATM communication switches to operate in an OFDM based wireless ATM system.

**In regards to Claim 5**, as discussed in the rejection of Claim 1, Berenbaum teaches that decoded mode selection data is supplied to modules. Berenbaum fails to teach data is supplied in parallel. Griffin further teaches these limitations.

Griffin further teaches in column 4, lines 9-12, rearranging serial data into parallel data (signals are supplied in parallel). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Griffin with the invention of Berenbaum since Griffin provides a method of forwarding data in parallel, which can be faster in certain cases than forwarding data in serial.

**In regards to Claim 6**, as discussed in the rejection of Claim 1, Berenbaum in view of Griffin and Markwalter teaches modules and mode selection signals. Berenbaum fails to teach modules are connected to each other in series. Laufer teaches these limitations.

In the same field of endeavor, Laufer teaches in page 203, lower half of first column, a number of reconfigurable chips chained together, where the output of each chip is connected directly to the input of the next one (modules are connected to each other in series). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Laufer with the invention of Berenbaum since Laufer provides a system where a convergence device of the apparatus of

Berenbaum can be composed of multiple components connected in a chain and that cooperate in processing data so that more data can be processed faster.

**In regards to Claims 7 and 11**, as discussed in the rejection of Claim 1, Berenbaum in view of Griffin and Markwalter teaches modules, incoming data, and a header. Berenbaum fails to teach a bypass mode where data is not acted on by a module and where a header indicates this. Laufer teaches these limitations.

In the same field of endeavor, Laufer teaches in page 203, lower half of the first column to the upper half of the second column, a Chip ID field of a header tells each chip whether to keep the header or pass it along, and when an input controller receives a bare packet, it checks to see if it is currently processing a header, and, if not, the packet must be for a device further on the chain, and the packet is passed on untouched (teach a bypass mode where data is not acted on by a module and where a header indicates this). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Laufer with the invention of Berenbaum since Laufer provides a mode indicated by a header where a component does not act on a packet and simply forwards it to an appropriate component within an apparatus, allowing the apparatus of Berenbaum to deactivate any unnecessary processing of particular packets and speeding up processing within the apparatus as a whole.

**Claims 8-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Berenbaum in view of Griffin, Markwalter, and further in view of Chieu et al. (Patent No.: US 6,501,807 B1), hereafter referred to as Chieu.

**In regards to Claim 8**, as discussed in the rejection of Claim 1, Berenbaum teaches digital processing and digital components that are configurable. Berenbaum fails to teach a radio signal processing apparatus where signals are processed digitally. Chieu teaches these limitations.

In the same field of endeavor, Chieu teaches in column 3, lines 45-47, a digital signal processor (DSP) and a radio module (a radio signal processing apparatus where signals are processed digitally). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Chieu with the invention of Berenbaum since Chieu provides an apparatus with components that can allow wireless digital communications, which can be used to extend the apparatus of Berenbaum to include wireless services to customers, such as cellular or WiMAX services.

**In regards to Claim 9**, Berenbaum teaches in column 3, lines 8-12, and in column 4, lines 6-12, and in FIG. 3, Sheet 1 of 3, a line card (item 50, FIG. 3) includes a transmission convergence (TC) device (item 543, FIG. 3) with an in-band control configuration (Reconfigurable signal processing architecture comprising a reconfigurable data processing module).

Berenbaum also teaches in column 4, lines 12-16, and in column 5, lines 23-27 and 37-44, and in FIG. 4, Sheet 2 of 3, a transmission convergence device interfaces with a Utopia port, which is part of an ATM cell-based switch fabric interconnect with a SONET port, and a message format of a single 53-byte ATM cell (item 70, FIG. 4) for use in transferring control information between a control processor and a transmission convergence device, and a given ATM cell received in a transmission convergence device from a control processor is identified as a control message by the presence of a specific virtual path indicator (VPI)/virtual channel indicator (VCI) address in the ATM header (item 72, FIG. 4) (data is input to a module in a packet frame structure including configuration frames and processing frames, each frame including a header section, a header section having a mode selection bit indicating whether the frame contains reconfiguration data or processing data, and a module is operable in a reconfiguration mode or a processing mode responsive to a frame header and a mode selection signal).

Berenbaum fails to explicitly teach a module is operable in a reconfiguration mode or a processing mode responsive to a mode selection signal, a header section and a data section, a plurality of reconfigurable data processing modules, a single decoder serving a plurality of modules, a single decoder decoding bits of packets and providing signals to a plurality of modules, in which a portion of a packet is used to change data processing performed by a module, data portion of a packet is processed by a data processing module responsive to a respective selection signal, default data supplied from memory outside a module. Griffin teaches a module is operable in a reconfiguration mode or a processing mode responsive to a mode selection signal, and

Markwalter teaches a header section and a data section, a plurality of reconfigurable data processing modules, a single decoder serving a plurality of modules, a single decoder decoding bits of packets and providing signals to a plurality of modules, in which a portion of a packet is used to change data processing performed by a module, data portion of a packet is processed by a data processing module responsive to a respective selection signal, Cheiu teaches default data supplied from memory outside a module.

In the same field of endeavor, Griffin teaches in column 3, lines 30-43, and in FIG. 3, a DATA I.D. BIT (FIG. 3) in front of and separated from DATA BITS (FIG. 3), and where a value of 1 for the data identification bit may be preselected to indicate a packet contains configuration information, and, is a valid configuration is determined to exist, the transmitter shifts into normal transmit mode (a module is operable in a reconfiguration mode or a processing mode responsive to a mode selection signal). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Griffin with the invention of Berenbaum since Griffin explicitly teaches a transmitter module shifting from a configuration mode to a normal transmit mode, and can be implemented in the apparatus of Berenbaum since it ensures a convergence device of Berenbaum is configured properly prior to further data processing, ensuring that subsequent data is not processed with an incorrect, obsolete, or expired configuration that may result in lost, misused, or misdirected data.

In the same field of endeavor, Markwalter teaches in column 8, line 65 to column 9, line 12, and in FIG. 2 and FIG. 3, a frame control FEC decoder 64 (FIG. 2) receives coded

frame control information (item 98, FIG. 3) from an FFT 58 (FIG. 2), and the frame control FEC decoder 65 (FIG. 2) uses these inputs to decode and demodulate the frame control information in a frame delimiter (item 92, FIG. 3), and once decoded and demodulated, the frame control information (item 98, FIG. 3) is passed to a MAC interface unit 74 (FIG. 2) for transfer to a MAC unit, and the MAC unit determines from the information if the delimiter (item 92, FIG. 3) indicates a start-of-frame, and if a start-of-frame is indicated, a RX configuration unit (item 72, FIG. 2) receives from the MAC unit frame control information to indicate that further decoding is necessary and the RX configuration unit uses the frame control information to direct the controller to configure the receiver units (items 66, 68, and 70, FIG. 2) for further decoding of the remainder of the frame, such as a payload (item 82, FIG. 3) (a header section and a data section, a plurality of reconfigurable data processing modules, a single decoder serving a plurality of modules, a single decoder decoding bits of packets and providing signals to a plurality of modules, in which a portion of a packet is used to change data processing performed by a module, data portion of a packet is processed by a data processing module responsive to a respective selection signal). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Markwalter with the invention of Berenbaum since Markwalter provides a routing system in which configuration methods can operate in a device implementing a MAC protocol and communicating through noisy media, whether wireless or wired media, and implementing OFDM, which can be incorporated into the system of Berenbaum to allow the ATM communication switches to operate in an OFDM based wireless ATM system.

In the same field of endeavor, Chieu teaches column 4, lines 46-52, and in FIG. 2, Sheet 1 of 6, a flash memory (item 24, FIG. 2) containing program instructions that are utilized upon initial start-up, where the start-up program is uploaded from the flash memory to a microcontroller (item 22, FIG. 2) and copied to a DRAM (item 23, FIG. 2) (default data supplied from memory outside a module). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Chieu with the invention of Berenbaum since Chieu provides a system where a start-up program is stored on non-volatile memory, allowing the apparatus of Berenbaum to reinitialize after being shut down or to recover after a power outage.

**In regards to Claim 10**, Berenbaum fails to teach a radio signal processing apparatus selected from a group consisting of a receiver, a transmitter, or a transceiver. As discussed in the rejection of Claim 8, Chieu teaches a radio signal processing apparatus. Chieu further teaches a receiver and a transmitter. Chieu further teaches in column 2, line 66 to column 4, line 6, and in FIG. 1, Sheet 1 of 6, a transmitter portion, a receiver portion, and a hybrid (a group consisting of a receiver, a transmitter, or a transceiver). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of Chieu with the invention of Berenbaum since Chieu provides an apparatus with components that can allow wireless digital communications, which can be used to extend the apparatus of Berenbaum to include wireless services to customers, such as cellular or WiMAX services.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1 and 3-11 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Kraslavsky (Patent Number: 5,699,350)** teaches in column 3, lines 29-49, altering configuration information using data in a configuration packet, in response to a determination that the received packet is a configuration packet, and changing the configuration of at least one of a loaded protocol stacks and the frame type assignments based on the altered configuration information.

**Salim (Patent No.: US 6,628,653 B1)** teaches in column 17, lines 11-16, information in a decision table relating to how packets are to be processed, can encompass both information on how a present incoming packet is to be processed, and information relating to reconfiguration of programmable hardware elements to enable future incoming packets to be processed differently.

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA SMITH whose telephone number is (571)270-1826. The examiner can normally be reached on Monday-Thursday 9:30am-7pm, Alternating Fridays 9:30am-6pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joshua Smith  
Patent Examiner  
20 June 2008

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